82-1277

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No. .....

In the Supreme Court of the United States

OCTOBER TERM, 1982

CARSONITE INTERNATIONAL CORPORATION, HIGH PERFORMANCE COMPOSITES, INC., and DONALD W. SCHMANSKI,

Petitioners,

v.

CARSON MANUFACTURING COMPANY, INC.,

Respondent.

APPENDIX

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

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APPENDIX A

CARSON MANUFACTURING COMPANY, INC.,
a California Corporation, Plaintiff-Appellant,

v.

CARSONITE INTERNATIONAL CORPORATION,
INC., and High Performance Composites, Inc.,
Nevada Corporations, Defendant-Appellees.

No. 79-4474.

United States Court of Appeals,
Ninth Circuit.

Argued and Submitted April 14, 1981.

Decided Oct. 13, 1981.

Holder of patent relating to driveable, flexible highway markers constructed of reinforced fiberglass brought action seeking damages and injunctive relief for patent infringement, trademark infringement, and unfair competition. The United States District Court for the Northern District of California, Samuel Conti, J., entered judgment for plaintiff on jury verdict, and defendant appealed. The Court of Appeals, Trask, Circuit Judge, held that: (1) the patent No. 4,092,081 was invalid because of obviousness, and (2) neither marks themselves nor manner in which underlying products were marketed created likelihood of confusion necessary for liability under the Lanham Act for trademark violation.

Reversed.

1. Patents 314(5)

Ultimate question of patent validity is a legal one.

2. Patents 112.1

Presumption of validity of a patent can be rebutted only by elder and convincing evidence. 35 U.S.C.A. § 282.

3. Patents 112.1

Where obviousness of a patent as compared to prior art is in issue and patent applicant fails to disclose relevant prior art, the presumption disappears; nevertheless, the presumption remains intact if the undisclosed prior art is merely cumulative of the cited art. 35 U.S.C.A. § 282.

4. Patents 112.1

Prior art undisclosed by patent applicant was merely cumulative of cited art, and therefore certain claims of the patent were entitled to a presumption of validity. 35 U.S.C.A. § 282.

5. Patents 26(2)

A combination patent will be upheld only if it produces an unusual or surprising result.

6. Patents 26(1)

Even though patented highway marker consisted of a single tangible element, it did not follow that the patent could not be considered a combination.

7. Patents 26(1)

Whether a patent is a combination patent depends,

not only on unitary or component nature of the patented invention or on tangibility of its elements, but instead on whether each element of the invention is old in the prior art.

8. Patent 18

Question of a patent's obviousness should be decided against background of three factual determinations; scope and contents of the prior art; differences between the prior art and claims at issue; and level of ordinary skill in the pertinent art.

9. Patents 314(5)

Ultimate question in determining a patent's obviousness is one of law: whether the differences are of such magnitude that they would not have been evident at time of invention to one possessed of ordinary skill in the art.

10. Patents 328(2)

Claims 1, 12, 13, 17, and 18 of patent No. 4,092,-081 relating to a driveable, flexible highway marker constructed of reinforced fiberglass were obvious as a matter of law and invalid.

11. Trade Regulation 334, 464

Question to be decided in determining questions of trademark violations is whether the marks create a likelihood of confusion such that consumers viewing one mark would probably assume that the product it represents is associated with source of a different product or service identified by the other mark and, though itself a question of law, this determination is based on six factual in-

quiries: strength of allegedly infringed mark; similarity in appearance, sound and meaning of the disputed marks; class of goods in question; marketing channels; evidence of intent of party using the infringing mark. Lanham Trade-Mark Act, §§ 32, 43(a), 15 U.S.C.A. §§ 1114, 1125(a).

12. Trade Regulation 334, 464

Neither trademarks themselves nor manner in which the underlying products were marketed created likelihood of confusion necessary for liability under the Lanham Act for trademark violation. Lanham Trade-Mark Act, §§ 32, 43(a), 15 U.S.C.A. §§ 1114, 1125(a).

Appeal from the United States District Court for the Northern District of California.

Before TRASK and BOOCHEVER, Circuit Judges, and CURTIS,* District Judge.

TRASK, Circuit Judge:

This appeal stems from a dispute over appellant Carson Manufacturing Co.'s manufacture and distribution of a highway marker which is very similar to a patented marker manufactured and distributed by appellee Carsonite International Corp. Appellant argues that the court below erred in awarding damage and injunctive relief for patent infringement, trademark infringement, and unfair competition based on a jury verdict of appellant's liability. We reverse.

---

* Honorable Jesse W. Curtis, Senior United States District Judge for the Central District of California.

U.S. 896, 97 S.Ct. 258, 50 L.Ed.2d 179; *see St. Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 838 (7th Cir.), *cert. denied*, 434 U.S. 833, 98 S.Ct. 119, 54 L.Ed.2d 94 (1977). However, where the obviousness of a patent as compared to the prior art is in issue and the patent applicant fails to disclose relevant prior art, the presumption disappears. *Hewlett-Packard Co. v. Tel-Design, Inc.*, 460 F.2d 625, 628 (9th Cir. 1972); *see Kamei-Autokomfort v. Eurasian Automotive Prods.*, 553 F.2d 603, 605 (9th Cir.), *cert. denied*, 434 U.S. 860, 98 S.Ct. 186, 54 L.Ed.2d 133 (1977); *Alcor Aviation, Inc., v. Radair, Inc.*, 527 F.2d 113, 115 (9th Cir. 1975), *cert. denied*, 426 U.S. 949, 96 S.Ct. 3170, 49 L.Ed.2d 1186 (1976). Nevertheless, the presumption remains intact if the undisclosed prior art is merely cumulative of the cited art. *Saf-Guard Prods., Inc. v. Service Pts., Inc.*, 532 F.2d at 1271 (quoting *Schnadig v. Gaines Mfg. Co.*, 494 F.2d 383, 391 (6th Cir. 1974)).

Claims 20, 24, and 25 are clearly not entitled to a presumption of validity, because they were declared invalid by the examiner during the reissue proceedings. Claims 1, 12, 13, 17, and 18, however, were declared valid even after presentation of previously uncited prior art references during those proceedings.

[4] Only one prior art reference, the Trelleborg patent, was not cited to the examiner at any stage of the proceedings. However, there is nothing about this reference that is not suggested by one or more of the references that were eventually cited to the examiner at some point in the proceedings. Thus, the Trelleborg

patent is merely cumulative of the cited art, and, therefore, Claims 1, 12, 13, 17, and 18 are entitled to a presumption of validity.

2

[5] A combination patent is an invention totally composed of old elements which are combined in an unprecedented manner. *See Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 280-81, 96 S.Ct. 1532, 1536-37, 47 L.Ed.2d 784 (1976); *M C Inds. v. Precision Dynamics Corp.*, 634 F.2d 1211, 1213 (9th Cir. 1980); *Herschensohn v. Hoffman*, 593 F.2d 893, 895 (9th Cir.), *cert. denied*, 444 U.S. 842, 100 S.Ct. 84, 62 L.Ed.2d 55 (1977). Such patents are subject to a more rigorous test of validity: A combination patent will be upheld only if it produces an "unusual" or "surprising" result. *M-C Inds. v. Precision Dynamics Corp., supra*, 634 F.2d at 1213; *Hewlett-Packard Co. v. Tel-Design, Inc.*, 460 F.2d 625, 629 (9th Cir. 1972); *Regimbal v. Scymansky*, 444 F.2d 333, 337-40 (9th Cir. 1971).[1] The rationale for heightened scrutiny of combination patents is to ensure that knowledge is not withdrawn from the public domain into the protected monopoly of one whose invention has not really advanced the art. *See A & P Tea Co. v. Supermarket Equip. Co.*, 340 U.S. 147, 152-53, 71 S.Ct. 127, 130-31, 95 L.Ed. 162 (1950). The issue here is whether each element of the Schmanski patent is old in the art.

It is evident from the record that each element of

[1] Sometimes this test is referred to as "synergism"—i.e., the whole must exceed the sum of its parts. See, e.g., Herschensohn v. Hoffman, supra, 593 F.2d at 897 n.1 (quoting Astro Music, Inc. v. Eastham, 564 F.2d 1236, 1238 (9th Cir. 1977)); Hewlett-Packard Co. v. Tel-Design, Inc., supra, 460 F.2d at 629.

the patent is indeed old in the art. The fiberglass formula (Claim 1), the variable El concept as it relates to driveability and flexibility (Claim 1), installation by means of driveable rigid body casings (Claims 12 and 13), the marker's shape (Claims 17 and 18), are each suggested by one or more of Humphrey, Schmanski-Rose, Barnett, the German patent, and Trelleborg.

Nevertheless, appellee argues that the Schmanski patent should not be considered a combination patent, because it protects a unitary object and not a mechanical or other device composed of discrete component parts. According to appellee, only the latter fall within the definition of a combination patent.

[6] The Schmanski marker does indeed consist of a single tangible element. Nevertheless, it does not follow that the patent cannot be considered a combination. The defining language used by the cases does not limit combination patents to devices composed of discrete component parts. *See, e.g., Great A & P Tea Co. v. Supermarket Equip. Co., supra,* 340 U.S. at 152, 71 S.Ct. at 130 ("an assembly of old elements," "unites old elements with no change in their respective functions"); *Sakraida v. Ag Pro, Inc., supra,* 425 U.S. at 280-81, 282, 96 S.Ct. at 1537 (combination of old elements); *M-C Inds. v. Precision Dynamics Corp., supra,* 634 F.2d at 1213 ("combines old elements in a different way"); *Herschensohn v. Hoffman, supra,* 593 F.2d at 895 ("All . . . elements are old in the art"). *But see SSP Agricultural v. Orchard-Rite, Ltd.,* 592 F.2d 1096, 1101 (9th Cir. 1979) ("mechanical" combination of old elements). Moreover,

Schmanski combines a number of abstract teachings and concepts which are individually old in the art. This court has long held that a patent need not be exclusively composed of tangible elements to be considered a combination. *Hewlett-Packard Co. v. Tel-Design, Inc., supra,* 460 F.2d at 629-30 & n.10; *see Santa Fe-Pomeroy v. P & Z Co.,* 569 F.2d 1084, 1091 (9th Cir. 1978); *Griffith Rubber Mills v. Hoffar,* 313 F.2d 1, 3 (9th Cir. 1963).

[7] The cases compel the conclusion that whether a patent is a combination patent depends, not on the unitary or component nature of the patented invention or on the tangibility of its elements, but instead on whether each element of the invention is old in the prior art. Under this analysis, we find the Schmanski patent to be a combination patent. Accordingly, we will uphold it only if we find that it produces an unusual or surprising result.

B

Appellant argues that the Schmanski patent is invalid because of obviousness, anticipation, overbreadth, and fraud. We find it necessary to consider only the first argument.

[8, 9] Nonobviousness is a statutory requirement of patentability. *See* 35 U.S.C. § 103. The question of a patent's obviousness should be decided against the background of three factual determinations: (1) the scope and content of the prior art, (2) differences between the prior art and the claims at issue, and (3) the level of ordinary skill in the pertinent art. *Graham v. John Deere*

Co., supra, 383 U.S. at 17, 86 S.Ct. at 693.[2] These factors were drawn from language in the legislative history of Section 103:

> An invention which has been made, and which is new in the sense that the same thing has not been made before, may still not be patentable if the difference between the new thing and what was known before is not considered sufficiently great to warrant a patent.
>
> If this difference is such that the subject matter as a whole would have been obvious at the time to a person skilled in the art, then the subject matter cannot be patented.

Graham v. John Deere Co., supra, 383 U.S. at 14, 15, 86 S.Ct. at 692 (quoting S.Rep.No.1979, 82d Cong., 2d Sess. 6 (1952); H.R.Rep.No.1923, 82d Cong., 2d Sess. 7 (1952)). The finder of fact must ascertain the state of the prior art, the differences between the disputed patent and the prior art, and the level of ordinary skill in the art. The ultimate question, however, is one of law:

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[2] **Graham** also states that "secondary considerations" such as "commercial success long-felt but unsolved needs, failure of others, etc." may be relevant as indicia of obviousness. **383 U.S. at 17-18, 86 S.Ct. at 694. See also Photo Elect Corp. v. England, 581 F.2d 772, 782 (9th Cir. 1978)** (that a patented invention was copied is evidence of nonobviousness). The general (though by no means exclusive) pattern in this circuit has been to consider secondary indicia only when the issue of obviousness is still in doubt after consideration of the three primary determinations. **See, e.g., SSP Agricultural v. Orchard-Rite, Ltd., supra, 592 F.2d at 1101; Kamei-Autokomfort v. Eurasian Automotive Prods., supra, 553 F.2d at 606; Hewlett-Packard Co. v. Tel-Design, Inc., supra, 460 F.2d at 630 (9th Cir. 1966); Walker v. General Motors Corp. 362 F.2d 56 at 60. But see Saf-Guard v. Service Pts., Inc., supra, 532 F.2d at 1272-73** (court considered secondary factors even though obviousness was clear under primary determinations).

Are the differences of such magnitude that they would not have been evident at the time of invention to one possessed of ordinary skill in the art?

[10] The jury did not render a special verdict disclosing specific findings on the *Graham* inquiries, so we do not know how the jury arrived at its conclusion that the Schmanski patent was valid. We need not review the record, however, because we conclude that the Schmanski patent is obvious as a matter of law. Every element of the patent is old in the art. Thus, the patented combination of these elements—a driveable-flexible marker—must yield an unusual or surprising result to be upheld. We find it impossible to maintain that, in light of the teaching of the German patent, it would not have occurred to an inventor familiar with and skilled in the pertinent art to construct the Humphrey marker of reinforced fiberglass. Similarly, it is an obvious innovation, in view of the teachings of Telleborg and Humphrey, to remove the longitudinal rib and accentuate the curve of the Rose-Schmanski "T" marker.[3] Either innovation would yield a driveable-flexible marker virtually identical to the Schmanski marker.

This evidence of obviousness is sufficiently strong to overcome the presumption of validity properly accorded to Claims 1, 12, 13, 17, and 18. The Schmanski patent is neither an unusual nor surprising advance in the art, and we accordingly hold it invalid because of obviousness. The verdict of patent infringement is hereby reversed.

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[3] This innovation was suggested by appellee's own advertisements.

II

[11] Appellant claims that there is insufficient evidence to support the jury verdict that appellant is liable for violations of Sections 32 and 43(a) of the Lanham Trademark Act, 15 U.S.C. §§ 1114, 1125(a).[4] In issue here are the names or marks under which appellant and appellee market their respective highway markers. The question that we must decide is whether the marks create a likelihood of confusion such that "consumers viewing [one] mark would probably assume that the product it represents is associated with the source of a different product or service identified by [the other] mark." *Alpha Industries, Inc. v. Alpha Steel Tube & Shapes, Inc.*, 616 F.2d 440, 443 (9th Cir. 1980) (quoting *Scott Paper Co. v. Scott's Liquid Gold, Inc.*, 589 F.2d 1225, 1229 (3d Cir. 1978); *accord Jockey Club, Inc. v. Jockey Club of Las Vegas, Inc.*, 595 F.2d 1167, 1168 (9th Cir. 1979) (quoting *Fleischmann Distilling Corp. v. Maier Brewing Co.*, 314 F.2d 149, 151-52 (9th Cir. 1963)). Though itself a question of law, this determination is based on six factual inquiries: (1) the strength of the allegedly infringed mark; (2) the similarity in appearance, sound and meaning of the disputed marks; (3) the class of goods in question; (4) marketing channels; (5) evidence of actual confusion; and (6) evidence of

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[4] Appelle also asserts that "[o]ther general allegations of unfair competition were made and were proven at trial [which] went beyond Section 43(a)." This is simply untrue. No federal common law or pendant claims were alleged by appellee in its counterclaim; the sole jurisdictional bases plead for the claim were federal statutes involving patent and trademark infringement. Because appellee's asserted unfair competition claims were suggested for the first time on appeal, they cannot serve as a basis for upholding the jury verdict. Therefore, we decline to consider them.

the intent of the party using the allegedly infringing mark. *Id.; see Alpha Industries, Inc. v. Alpha Steel Tube & Shapes, Inc., supra,* at 444.

(1) Carsonite is a fictitious name that does not correspond to anything in the real world. Consequently, it is sufficiently "fanciful and distinctive" to receive the greater protection accorded strong marks. *See Jockey Club, Inc. v. Jockey Club of Las Vegas, Inc., supra,* 595 F.2d at 1168.

(2) The parties differ on names of the marks in issue. Appellant contends that its mark is "Roadmarker," and the appellee's mark is "Carsonite." Appellee contends that its mark is "Carsonite Roadmarker," and that appellant's mark is "Carson Roadmarker."

"Roadmarker" is at best a descriptive term that is not protectible as a trademark in the absence of evidence of secondary meaning. Appellee has supplied no such evidence. Indeed, its registered trademark is "Carsonite," and not "Carsonite Roadmarker." Moreover, appellant markets its highway marker as "Roadmarker," and not as "Carson Roadmarker." "Carson appears in appellants advertising only as part of the designation of appellant's company—"Division/Carson Mfg. Company." The record shows that "Carson Mfg. Company" is a bona fide business name that appellant has used for nearly 100 years. Finally, appellants use the distinctive "boomerang" logo of Carson Mfg. Company in marketing their "Roadmarker", whereas no logo at all appears on appellee's advertising. We conclude that the marks in issue

are "Carsonite" and "Roadmarker." These marks are not at all similar.

(3) The products denominated by the respective marks are virtually identical—driveable-flexible highway markers constructed of reinforced fiberglass.

(4) The manner in which markers are marketed tends to reduce the possibility of confusion. Orders are placed direct to the manufacturer; there is no central retail/wholesale outlet where a buyer could go and purchase appellant's product thinking it was appellee's. In bidding for state highway contracts, each manufacturer usually submits its own bid, and each such bid is generally given a separate file number.

(5) Appellee cites as evidence of confusion a California Department of Transportation (CalTrans) memo issued to clarify that appellee's marker was CalTrans-approved, whereas appellant's was not. It also relies on an order for "Carsonite Roadmarkers" which was erroneously placed with appellant. Appellant concedes that some confusion was evident in the several months immediately following its entry into the market, but that such confusion quickly dissipated once appellant established itself as a competitor to appelle. Appellee cites no examples of confusion that occurred significantly after appellant's initial entry into the market.

(6) There is no evidence of intent that appellant intended to confuse buyers and trade off appellee's goodwill when it chose the name for its marker. When orders for "Carsonite Roadmarkers" were placed with it rather

than with appellee, appellant explained to the buyers that the marker it sold was not the "Carsonite Roadmarker." According to appellant, the orders were filled only after the buyers understood that there were two different companies and two different products.

[12] As a matter of law, we conclude that appellant is not liable to appellee under either Section 32 or Section 43(a). The evidence is simply insufficient to support the conclusion that a violation occurred. It is clear from the record that neither the marks themselves (Section 32) nor the manner in which the underlying products are marketed (Section 43(a)) create the likelihood of confusion necessary for liability under the Lanham Act. *Cf. Alpha Industries, Inc. v. Alpha Steel Tube & Shapes, Inc., supra* (holder of registered mark "ALPHA" given no relief under Lanham Act for defendant's use of "ALPHA STEEL TUBE" or "ALPHA STEEL TUBE & SHAPES"). The verdicts of liability under Sections 32 and 43(a) are hereby reversed.

The judgment is REVERSED.

APPENDIX B

UNITED STATES COURT OF APPEALS FOR NINTH CIRCUIT

Filed March 3, 1982
No. 78-3270

ROBERT SARKISIAN,

Plaintiff-Appellee,

vs.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Appellants.

No. 79-4474

CARSON MANUFACTURING COMPANY, INC., a California Corporation,

Plaintiff-Appellant,

vs.

CARSONITE INTERNATIONAL CORPORATION, INC., and HIGH PERFORMANCE COMPOSITES, INC., Nevada Corporations,

Defendant-Appellees.

No. 79-4589
ORDER

PETER A. HAMMERQUIST,

Plaintiff-Appellee,

vs.

CLARKE'S SHEET METAL, INC.,

Defendant-Appellant.

Before: BROWNING, Chief Judge, WRIGHT, CHOY, GOODWIN, WALLACE, SNEED, KENNEDY, ANDERSON, HUG, TANG, SCHROEDER, FLETCHER, FARRIS, PREGERSON, ALARCON, POOLE, FERGUSON, NELSON, CANBY, BOOCHEVER, NORRIS, and REINHARDT, Circuit Judges

Upon the vote of a majority of the regular active judges of this court, it is ordered that these cases shall be reheard by an en banc panel of the court pursuant to Rule 25 of the Rules of the United States Court of Appeals for the Ninth Circuit. The previous three-judge panel assignments are hereby withdrawn.

JAMES BROWNING,
Chief Judge

APPENDIX C

UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

Filed April 2, 1982

No. 78-3266

ROBERT SARKISIAN,

Plaintiff-Appellee,

v.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Appellants,

No. 78-3270

ROBERT SARKISIAN,

Plaintiff-Cross-Appellant,

v.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Cross-Appellees.

No. 79-4474

CARSON MANUFACTURING COMPANY, INC., a California Corporation,

v.

CARSONITE INTERNATIONAL CORPORATION, INC., and HIGH PERFORMANCE COMPOSITES, INC., Nevada Corporations,

Defendant-Appellees.

No. 79-4589

ORDER

PETER A. HAMMERQUIST,

Plaintiff-Appellee,

v.

CLARKE'S SHEET METAL, INC.,

Defendant-Appellant.

Before: BROWNING, Chief JUDGE, WRIGHT, GOODWIN, WALLACE, ANDERSON, TANG, SCHROEDER, FARRIS, FERGUSON, NELSON and CANBY, Circuit Judges

The parties shall submit supplemental briefs not to exceed 25 pages addressing the following questions as they apply to their respective cases:

1. Is "synergism" or an "unusual or surprising result" a requisite to a finding of non-obviousness of a "combination" patent?

2. In determining non-obviousness, what questions may or must the trial court submit to the jury, and what questions may or must it reserve to itself?

3. What are the proper standards of review in this court of the answers of the trial court and of the jury to these questions?

Appellants' briefs shall be filed by April 30, 1982. Appellees' briefs shall be filed by May 20, 1982. Ap-

APPENDIX D

UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

Filed June 4, 1982
No. 78-3266

ROBERT SARKISIAN,

Plaintiff-Appellee,

v.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Appellants,

No. 78-3270

ROBERT SARKISIAN,

Plaintiff-Cross-Appellant,

v.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Cross-Appellees.

No. 79-4474

CARSON MANUFACTURING COMPANY, INC., a California Corporation,

v.

CARSONITE INTERNATIONAL CORPORATION, INC., and HIGH PERFORMANCE COMPOSITES, INC., Nevada Corporations,

Defendant-Appellees.

No. 79-4589

ORDER

PETER A. HAMMERQUIST,

Plaintiff-Appellee,

v.

CLARKE'S SHEET METAL, INC.,

Defendant-Appellant.

These cases shall be consolidated for oral argument. Each side in each of the cases shall be allowed 20 minutes. Counsel for all parties shall confer and agree upon an orderly presentation that will avoid duplication.

APPENDIX E

UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

Filed September 21, 1982

Nos. 78-3266
78-3270
DC# CV 75-1131

(D. Oregon)

ROBERT SARKISIAN,

Plaintiff-Appellee/
Cross-Appellant,

v.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Appellants/
Cross-Appellees.

No. 79-4474

DC# CV 78-1763
(N.D. Cal.)

CARSON MANUFACTURING COMPANY, INC., a California Corporation,

Plaintiff-Appellant,

v.

CARSONITE INTERNATIONAL CORPORATION, INC., and HIGH PERFORMANCE COMPOSITES, INC., Nevada Corporations,

Defendant-Appellees.

No. 79-4589

DC# CV 76-766
(D. Oregon)

OPINION

PETER A. HAMMERQUIST,

Plaintiff-Appellee,

v.

CLARKE'S SHEET METAL, INC.,

Defendant-Appellant.

Appeals from the United States District Court
for the District of Oregon,
District Judge Otto R. Skopil, Presiding,
and from the United States District Court
for the Northern District of California,
District Judge Samuel Conti, Presiding.
[Argued and Submitted June 14, 1982]

Before: BROWNING, Chief Judge, WRIGHT, GOODWIN, WALLACE, ANDERSON, TANG, SCHROEDER, FARRIS, FERGUSON, NELSON and CANBY, Circuit Judges.*

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*Judge Skopil, not a member of the en banc court, recused himself and did not participate in the voting to take the cases en banc.

PER CURIAM:

Pursuant to Ninth Circuit General Order 5.5(d), we ordered rehearing en banc to address issues of patent law raised in three recent cases. *Sarkisian v. Winn-Proof Corp.*, ... F.2d ..... (9th Cir. 1981); *Hammerquist v. Clarke's Sheet Metal, Inc.*, 658 F.2d 1319 (9th Cir. 1981); *Carson Manufacturing Co. v. Carsonite International Corp.*, ... F.2d ..... (9th Cir. 1981). They are:

1. Is "synergism" or an "unusual or surprising result" a requisite to a finding of nonobviousness of a combination patent?

2. In determining nonobviousness, what questions may or must the trial court submit to the jury and what questions may or must it reverse to itself?

3. What are the proper standards of review of the answers of the district court and of the jury to these questions?

INTRODUCTION

I.

Synergism is one of a number of words and phrases used by the courts to express that the degree of innovation required to meet the Constitutional test of invention or nonobviousness set forth in 35 U.S.C. § 103 is rarely found in a combination of old elements. The Supreme Court has not precisely defined the word, and circuit and

district courts have variously described it.[1] Those various definitions have produced uncertainty in litigation requiring preciseness. Use of the word, therefore, should be avoided unless the combination in issue is synergistic in the literal sense.

We often have referred to the principle of synergism

---

[1] Although the Ninth Circuit has long equated synergism with "unusual or surprising" consequences, other circuits have adopted competing definitions. See, e.g., **NDM Corp. v. Hayes Products, Inc.**, 641 F.2d 1274 (9th Cir.), **cert. denied**, 102 S.Ct. 970 (1981); **Tveter v. AB Turn-O-Matic**, 633 F.2d 831 (9th Cir. 1980), **cert. denied**, 451 U.S. 911 (1981); **Rex Chainbelt Inc. v. Harco Products, Inc.**, 512 F.2d 993 (9th Cir.), **cert. denied**, 423 U.S. 831 (1975).

The Seventh Circuit, which has rejected the "synergism" test due to what the court felt were insurmountable definitional problems, defined synergism:

> A definition of synergism that reflects its etymon is that the elements in the combination must cooperate or interact with each other. So defined, synergism distinguishes those inventions in which the parts are merely aggregated, and those in which the parts coact with each other so that the result comes from the combined effect of the several parts and not simply from the separate action of each. Under this formulation, the presence or absence of synergism proves little. Today, almost all mechanical devices consist of parts which interact with each other.

Republic Industries, Inc. v. Schlage Lock Co., 592 F.2d 963, 970 (7th Cir. 1949).

The Second Circuit, see **Champion Spark Plug Co. v. Gyromat Corp.**, 603 F.2d 361, 372 (2d Cir. 1979), **cert. denied**, 445 U.S. 916 (1980), and the Tenth Circuit, **Plastic Container Corp. v. Continental Plastics of Oklahoma, Inc.**, 607 F.2d 885, 904-05 (10th Cir. 1979), **cert. denied**, 444 U.S. 1018 (1980), have followed the Seventh Circuit in its rejection of "synergism." In Chief Judge Markey's address, "The Synergism Virus: Cause and Cure," 496 BNA Patent, Trademark & Copyright Journal D-1 to D-3 (Sept. 18, 1980), he condemned synergism as an impossible standard: " 'Synergism' in the dictionary sense is applicable only to chemistry where, for example one may combine two gases to produce a liquid, or to the allied drug act, where two drugs may have an effect greater when combined than when taken separately."

in our patentability opinions concerning combination inventions. A close reading of those decisions reveals that this circuit always has regarded synergism as a functional equivalent of the "unusual or surprising results" test as the proper means of assessing nonobviousness under 35 U.S.C. § 103.[2]

To reduce the unforeseen confusion that this unnecessary use of equivalent terms has injected into the law of patentability in this circuit, we now hold that the unusual or surprising results test is the sole and exclusive measure of patentability for mechanical combination patents in this circuit. *See Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152 (1950).

The *Sarkisian* disquisition on the meaning of synergism, which attempts to distinguish between the "real" meaning of synergism and the unusual or surprising test, disavows the long-established test. The unacceptable effect of the *Sarkisian* analysis is to lower the standard of patentability for combination patents.[3] The standard of patentability expressed in the unusual or surprising

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[2] See NDM Corp. v. Hayes Prods. Inc., 641 F.2d 1274 (9th Cir.), cert. denied, 102 S.Ct. 970 (1981); Tveter v. AB Turn-O-Matic, 633 F.2d 831 (9th Cir. 1980), cert. denied, 451 U.S. 911 (1981); Satco, Inc. v. Transequip, Inc., 594 F.2d 1318 (9th Cir.), cert. denied, 444 U.S. 865 (1979); Herschensohn v. Hoffman, 593 F.2d 893 (9th Cir.), cert. denied, 444 U.S. 842 (1979); Penn Int'l Indus. v. Pennington Corp., 583 F.2d 1078 (9th Cir. 1978).

[3] The Sarkisian opinion correctly notes the axiom that hindsight is not relevant in litigation. What may seem surprising prior to the combination of old elements is more likely to appear common by hindsight. We reiterate that the test for obviousness should scrutinize the combination as of its announcement.

test indicates the need to exercise caution when deciding to permit the patenting of a combination of old elements.

In reaffirming the unusual or surprising test as applied to a combination of old elements, we comply with the Constitutional standard set out in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), and necessarily embodied in § 103. As applied to a combination of old elements, "obviousness" is a term of art. The unusual or surprising formulation clarifies the obviousness standard as applied to combinations of old elements. That formulation has been successful in so doing[4] and should be retained.

II.

The Constitutional standard of patentability set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), requires three findings of fact to support a conclusion about obviousness: (1) the nature of the prior art, (2) the differences between the prior art and the patented device, and (3) the level of ordinary skill in the pertinent art.

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[4] **NDM Corp. v. Hayes Products, Inc., 641 F.2d 1274, 1280 (9th Cir.), cert. denied, 102 S.Ct. 970 (1981); M-C Industries, Inc. v. Precision Dynamics Corp., 634 F.2d 1211, 1214 (9th Cir. 1980); Tveter v. AB Turn-O-Matic, 633 F.2d 831, 835 (9th Cir. 1980); Palmer v. Orthokinetics, Inc., 611 F.2d 316, 323 (9th Cir. 1980); Satco, Inc. v. Transequip, Inc. 594 F.2d 1318, 1322 (9th Cir.), cert. denied, 444 U.S. 865 (1979); Herschensohn v. Hoffman, 593 F.2d 893, 896-97 (9th Cir.), cert. denied, 444 U.S. 842 (1979); Penn Int'l Industries v. Pennington Corp., 583 F.2d 1078, 1081 (9th Cir. 1978); Photo Electronics Corp. v. England, 581 F.2d 772, 775, 781 (9th Cir. 1978); Rex Chainbelt, Inc. v. Harco Products, Inc., 512 F.2d 993, 999 (9th Cir.), cert. denied, 423 U.S. 831 (1975); Hewlett-Packard Co. v. Tel-Design, Inc., 460 F.2d 625, 629 (9th Cir. 1972); Reeves Instrument Corp. v. Beckman Instruments, Inc., 444 F.2d 263, 270-71 (9th Cir.), cert. denied, 404 U.S. 951 (1971); Santa Anita Mfg. Corp. v. Lugash, 369 F.2d 964, 966-67 (9th Cir. 1966), cert. denied, 389 U.S. 827 (1967).**

Id. at 17. These factual determinations are made by the fact finder, preferably by detailed special interrogatories in jury trials, and by detailed findings in nonjury trials. Fed. R. Civ. P. 52(a).

On the basis of these findings, the court must determine obviousness as a matter of law. *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147 (1950). It may submit the question of obviousness to the jury for its guidance, *cf. Velo-Bind, Inc. v. Minnesota Mining & Mfg. Co.*, 647 F.2d 965, 971 (9th Cir.) (obviousness finding by the jury), *cert. denied*, 102 S.Ct. 658 (1981), but retains the duty to decide the question independent of the jury's conclusion.

The *Hammerquist* opinion affirmed a jury's conclusion that a patent was not obvious. It focused on the court's instructions to the jury and the jury's conclusions and findings. Nevertheless, we are satisfied that the *Hammerquist* panel found a sufficient intervention by the judge. It noted:

> We are satisfied that the trial judge carefully performed his duty in reviewing the jury's verdict. He adopted as his own the jury's law application.

658 F.2d at 1323.

Portions of *Hammerquist* appear to approve committing the ultimate question of obviousness to the jury upon proper instructions in the law. *E.g., id.* at 1322 ("The question of obviousness for the purpose of allocating the work between judge and jury is a question for the

trier of fact upon proper instruction on the law."). Because we hold that the court ultimately must decide obviousness specifically as a matter of law, we disapprove any language or procedure apparently to the contrary in *Hammerquist*.

III.

The appropriate standard of appellate review simply depends on which portion of the obviousness inquiry is in issue. The predicate factual determinations are reviewed under the appropriate standard for findings of fact. If made by the jury, we review for support by substantial evidence. *California Computer Products v. International Business Machines Corp.*, 613 F.2d 727, 734 (9th Cir. 1979). We review a judge's findings under the clearly erroneous test. Fed. R. Civ. P. 52(a).

The ultimate question of obviousness, including whether the combination in issue displays an unusual or surprising result, is a question of law. It is subject to our independent review.

IV.

In summary, we hold the following:

1. A determination of an "unusual or surprising result" is a requisite to a finding of nonobviousness of a combination patent.

2. (a) In determining nonobviousness in all patent litigation, the trial court in a jury trial must submit to the jury determination of (i) the nature of the prior art, (ii) the differences between the prior art and the patented device, and (iii) the ordinary level of skill in

the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

(b) The court may submit the ultimate fact of obviousness to the jury for a nonbinding advisory opinion. *Cf. Velo-Bind, Inc. v. Minnesota Mining & Mfg. Co.*, 647 F.2d 965, 971 (9th Cir.), *cert. denied*, 102 S.Ct. 658 (1981).

(c) The court must, in all cases, determine obviousness as a question of law independent of the jury's conclusion. Constitutional standards of patentability must not be evaded by improper fact finding. *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147 (1950); *see also Speed Shore Corp. v. Denda*, 605 F.2d 469, 471 (9th Cir. 1979).

3. (a) On appeal to this Court, we review the factual findings made by the jury under the substantial evidence test and those by the judge using the clearly erroneous test of Fed. R. Civ. P. 52(a).

(b) The legal question of obviousness is subject to independent review by this Court, free of the restraining influence of the clearly erroneous rule.

CONCLUSION

We remand the *Sarkision* case to the panel for determination, in accordance with this opinion, whether the patented device produced an unusual or surprising result.

In *Hammerquist*, the court adequately determined whether the jury's conclusion of obviousness was ap-

propriate as a matter of law. Any portion of that opinion that implies the question of obviousness is simply a question of fact, subject to the substantial evidence test, is disapproved. All statements in *Hammerquist* that approve the use of the term "synergism" are disapproved.

The *Carson* opinion is not in conflict with this opinion. Any statement therein that may reflect approval of the use of the word "synergism" is disapproved.

APPENDIX F

IN THE U.S. COURT OF APPEALS FOR THE NINTH CIRCUIT

No. 79-4474

ORDER FOR PUBLICATION

CARSON MANUFACTURING COMPANY, a California corporation,

Plaintiff-Appellant,

vs.

CARSONITE INTERNATIONAL CORPORATION, INC., and High Performance Composites, Inc., Nevada Corporations,

Defendant-Appellees.

Before: BROWNING, Chief Judge, WRIGHT, GOODWIN, WALLACE, ANDERSON, TANG, SCHROEDER, FARRIS, FERGUSION, NELSON and CANBY, Circuit Judges.

It is ordered that the panel opinion filed on October 13, 1981, and later withdrawn from publication, will now be published.

FOR THE COURT:

EUGENE A. WRIGHT,
U.S. Circuit Judge

September 17, 1982

APPENDIX G

Filed November 1, 1982

Nos. 78-3266
78-3270

DC# CV 75-1131
(D. Oregon)

ROBERT SARKISIAN,

Plaintiff-Appellee/
Cross-Appellant,

v.

WINN-PROOF CORP., WILLIAM A. WERNER, and WER-NEL ENTERPRISES, INC.,

Defendants-Appellants/
Cross-Appellees.

No. 79-4474

DC# CV 78-1763
(N.D. Cal.)

CARSON MANUFACTURING COMPANY, INC., a California corporation,

Plaintiff-Appellant,

v.

CARSONITE INTERNATIONAL CORPORATION, a Nevada corporation, HIGH PERFORMANCE COMPOSITES, a Nevada corporation,

Defendants-Appellees.

APPENDIX H

UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

No. 79-4474
DC No. CV 78-1763 SC

CARSON MANUFACTURING COMPANY, INC., a California Corporation,

Plaintiff-Appellant,

vs.

CARSONITE INTERNATIONAL CORPORATION, INC., et al.,

Defendants-Appellees.

APPEAL from the United States District Court for the Northern District of California.

THIS CAUSE came on to be heard on the Transcript of the Record from the United States District Court for the Northern District of California and was duly submitted.

ON CONSIDERATION WHEREOF, It is now here ordered and adjudged by this Court, that the judgment of the said District Court in this Cause be, and hereby is reversed.

Filed and entered October 13, 1981.

APPENDIX I

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

Civil Action No. C78-1763 SC

CARSONITE INTERNATIONAL CORPORATION, a Nevada corporation; HIGH PERFORMANCE COMPOSITES, INC., a Nevada corporation; HPC, INC., a Nevada corporation; and DONALD W. SCHMANSKI, an individual,

Plaintiffs,

v.

CARSON MANUFACTURING CO., INC.
a California corporation,

Defendants.

CARSONITE INTERNATIONAL CORPORATION, et al.,

Counterclaimants,

v.

CARSON MANUFACTURING CO., INC.
et al.,

Counterdefendants.

[TRANSCRIPT EXTRACT-PORTIONS OF EXAMINATION OF O'CONNELL, PRESIDENT OF CARSON MANUFACTURING CO. RT 638-650.]

Q. MR. NORTH: Did you know that the word "Carsonite" was a registered trademark?

A. MR. O'CONNELL: I know that the name "Carsonite" is a registered trademark.

Q. When did you first learn of that?

A. Again, it was probably sometime in 1977 but I can't speak of the month. My awareness came about with seeing the name "Carsonite" with the registered mark after the name.

* * *

Q. Did you realize that a registered trademark constitutes notice to the whole world in a particular field that someone else should not come in and introduce a product with a confusingly similar name?

A. I would guess that I would have assumed that.

* * *

Q. Therefore, is it a fair conclusion to state that Carsonite had a registered trademark in the field as we have discussed for these delineators of composite structure prior to your involvement in the field of highway delineation?

A. That's correct.

Q. I suppose in laymen terms then we could say that comparing these two parties of Carsonite . . . and Carson Manufacturing, which one of these two parties would be the newcomer in the field of highway delineation?

A. In terms of the registered trademark, Carson Manufacturing would be a newcomer.

* * *

Q. Mr. O'Connell, I'm showing you exhibit marked Plaintiff's Exhibit 97 [the alleged infringing Carson delineator]. Would you state — is it true that there is the name "Road Marker" on this delineator?

A. That's correct.

Q. Isn't it also true that the name "Carson" is immediately below the name "Road Marker"?

A. Not the name "Carson," no, sir. It says "Carson Manufacturing Company," which is the corporate identity.

Q. That's right. But included in that corporate identity is the word "Carson"; isn't that true?

A. Is the name "Carson," that's correct. It's not a word, it's a name.

Q. It's a name. So the name "Carson" then appears with the name "Road Marker"?

A. Yes, sir. Yes, sir, it does.

* * *

Q. You have never heard anyone refer to your product as a "Carson Road Marker"?

A. I have heard our product called a great many things.

Q. Did those include the reference "Carson Road Marker"?

A. I would have to guess that that was one of the names that they referred to it as.

* * *

Q. The issue we're dealing with here is a very simple one, Mr. O'Connell. We have a client here, a party who has a registered trademark.

A. Yes, sir.

Q. And it's very clear that the trademark says, "for structural members made of composite." Now, we've indicated that this structural member, Road Marker, Division of Carson Manufacturing, is, indeed, a very product of that description. Is that not true?

A. I don't know that that's been totally ascertained, but it is a similar product.

Q. Is it made of composite of fiber and resin and —

A. Yes, it is.

* * *

Q. Mr. O'Connell, can we agree that there was at least some level of actual confusion in the marketplace among people using the road markers representing Carson and Carsonite?

A. There may well have been, Mr. North.

* * *

Q. Has Carson Manufacturing ever received a request for a delineator product from a purchaser which in effect was requesting a Carsonite road marker?

A. Yes, sir.

Q. You have received those?

A. Yes, sir.

* * *

Q. Did you ever supply any *Carson Road Markers* in response to those requests for a *Carsonite* road marker?

A. Ultimately, yes, sir, we did.

[TRANSCRIPT OF CONCLUDING JURY COMMENTS]

THE COURT: One question I want to ask you, *what was the dictionary used for? What Word?*

THE FORELADY: A couple of words.

THE COURT: What were they?

THE FORELADY: *Ultimately, what we were looking for, non-destructive deformation,* but we couldn't find non-destructive, but we used it for trade secret, which was very valuable.

THE COURT: And do you find that this type of a case should be tried to a jury?

JUROR NUMBER SEVEN: Yes.

JUROR NUMBER FIVE: I am not so sure.

THE COURT: Let's go down the list. Do you think this type of a case should be tried by a jury?

JUROR NUMBER ONE: I really have no comment.

JUROR NUMBER TWO: Yes.

JUROR NUMBER THREE: I disagree. I don't think the lay person has enough knowledge of the laws of patents. It's very involved and I thought it was. Yes. I don't think it should be.

JUROR NUMBER FOUR: I think it should be, although it was very, very technical.

THE COURT: Even though it's technical, you think it should be tried by a jury?

JUROR NUMBER FOUR: Yes.

JUROR NUMBER FIVE: There are more things than just the technicalities involved and if it were just technical people judging it, too much would be left out, but I do think we need a little, perhaps, one or two technicians on the jury.

THE COURT: Uh-huh.

JUROR NUMBER SIX: I think it should be tried by a jury.

THE COURT: Jury.

JUROR NUMBER SEVEN: This was a very difficult case. We found that out today. We have worked hard.

THE COURT: I know you have.

JUROR NUMBER SEVEN: But it was an education as well for all of us.

THE COURT: What do you think, if you had a patent, would you want it tried before a jury?

JUROR NUMBER THREE: No, honestly.

THE COURT: And the forelady?

THE FORELADY: I think it's part of the process and the advantage of having more people. You tend to look at the truth differently, or look at an item differently, and you get a different perspective.

THE COURT: Suppose you had a patent. Would you want it tried before a jury?

THE FORELADY: I think I would.

THE COURT: You would.

THE FORELADY: I think I would.

THE COURT: Okay. Fine.

Well, thank you again and we hope to see you soon. (Whereupon, the trial was concluded.)

APPENDIX J

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
938,241	08/30/78	Donald W. Schmanski	

Vaughn W. North
Univ. of Utah
2045 Annex
Salt Lake City, Utah 84112

EXAMINER	
N.C. Byers	
ART UNIT	PAPER NUMBER
351	#9

DATE MAILED: APR 27 1979

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

GROUP 350

[X] This application has been examined. [X] Responsive to communication filed on 2/11/79 [ ] This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), ____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:
1. [X] Notice of References Cited, Form PTO-892. 2. [ ] Notice of Informal Patent Drawing, PTO-948.
3. [ ] Notice of Informal Patent Application, Form PTO-152. 4. [ ] _____

Part II SUMMARY OF ACTION
1. [X] Claims 1 - 30 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. [ ] Claims _____ have been cancelled.
3. [ ] Claims _____ are allowed.
4. [X] Claims 1-20 are rejected.
5. [X] Claims 21-29 are objected to.
6. [ ] Claims _____ are subject to restriction or election requirement.
7. [ ] The formal drawings filed on _____ are acceptable.
8. [ ] The drawing correction request filed on _____ has been [ ] approved. [ ] disapproved.
9. [ ] Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has
[ ] been received. [ ] not been received. [ ] been filed in parent application, serial no. _____,
filed on _____.
10. [ ] Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
11. [X] Other

Claims 1-19 and 21-30 avoid the prior art, and rejections of record.

EXAMINER'S ACTION

APPENDIX K

United States Patent [19] [11] **4,092,081**
Schmanski [45] **May 30, 1978**

[54] **ROADWAY/TRAFFIC DELINEATOR**

[75] Inventor: **Donald W. Schmanski, Carson City, Nev.**

[73] Assignee: **HPC, Inc., Carson City, Nev.**

[21] Appl. No.: **812,643**

[22] Filed: **Jul. 5, 1977**

[51] Int. Cl.[2] **E01F 9/00**
[52] U.S. Cl. **404/10**
[58] Field of Search ..... 404/9, 10, 40/145 A; 256/1

[56] **References Cited**

U.S. PATENT DOCUMENTS

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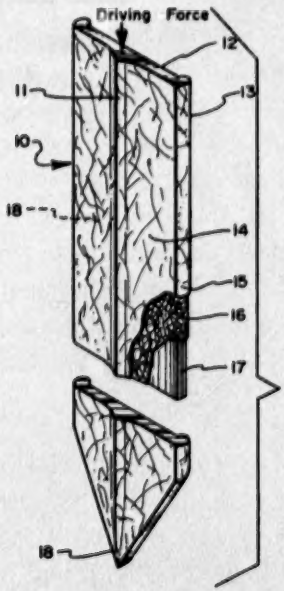
3,212,415	10/1965	Byrd	404/10
3,371,647	3/1968	Shepbell	404/10
3,502,007	3/1970	Anderson	404/10
3,708,112	1/1973	Ehinger	404/10
3,820,906	6/1974	Katt	404/10 X

Primary Examiner—Nile C. Byers
Attorney, Agent, or Firm—Criddle, Thorpe & Western

[57] **ABSTRACT**

A post designed for sign or guide marker use having sufficient longitudinal rigidity to withstand a force driving it into the ground and sufficient elasticity to permit nondestructive deformation upon impact by a moving object, with subsequent restoration to an original, upright position. Various construction materials and/or structural configurations are disclosed for obtaining this dual character without incurring high production and material costs.

36 Claims, 13 Drawing Figures



[EXTRACTS]

1

ROADWAY/TRAFFIC DELINEATOR BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to roadway markers or guide posts. More particularly, it is concerned with resilient posts which permit nondestructive deformation upon impact by a moving object.

2. Prior Art

Vehicle traffic control requires the use of road signs and markers as aids in solving the various problems associated with traffic safety and direction. It has been found that a useful characteristic for such signs and markers is that these posts have the ability to withstand vehicle impact, without requiring subsequent replacement. An attempt has been made to fill this need with various configurations of posts. However, the structural design of such posts has involved the consideration of two opposing structural features, i.e. the elasticity required during dynamic conditions to permit the post to nondestructively bend with vehicle impact and the longitudinal rigidity required during static conditions to withstand forces resulting as the post is driven into a hard surface.

The elasticity is necessary in view of frequent high speeds associated with impacts between a moving vehicle and stationary post. In such cases, if the post could not bend it would likely shear off, and would have to be replaced. Mere bendability, however, is not sufficient, since each time a post was bent it would have to be

straightened before it could again be functional. This could involve high maintenance costs. Ideally, a post should also have sufficient elasticity that it will automatically assume its proper upright configuration after dissipation of any impact forces.

While elasticity is desirable, the elasticity may present a practical problem when installation of the post is considered. In the past, when deformable plastics have been used as post material, installation has frequently required predrilling a hole or insertion of some support receptacle into the ground, with the subsequent positioning of the plastic post into the hole or receptacle. These preliminary steps were required because such previously known elastic posts would not withstand a buckling force applied during attempts to drive the posts into hard surfaces. Consequently, the same elastic properties which permitted the nondestructive deformation upon impact caused the buckling of a post subjected to a driving force along its axis.

Attempts have been made to incorporate the dual requirements of elasticity and rigidity by utilizing a spring within an otherwise rigid post, and with the rigid parts of the post being secured on opposite ends of the spring. Installation was by compressing the spring and then pounding along the now rigid longitudinal axis. After installation, the deformable character of the post was accomplished by the transverse elastic property of the included spring.

This configuration, however, has several apparent

disadvantages. The rigid portion of the structure has customarily been made of strong materials which may dent or otherwise damage the impacting vehicle. Furthermore, the use of such rigid materials and springs and the assembly requirements result in exclusive costs for the posts.

U.S. Pat. No. 3,875,720 discloses a second approach to the problem, of providing elasticity in a post that can be driven. In this patent a post is formed by a bundle of flexible rods that are clamped together to obtain the desired rigid property required during the static installation stage of the post. Deformation of the post during dynamic conditions is permitted by deflection of the various flexible rods away from the central axis of the post structure. Here again, however, economic factors appear to have impeded utilization of such structure despite the growing need for such a post.

OBJECTS AND SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a deformable post configuration having both longitudinal rigidity and bending elasticity to facilitate driving emplacement and subsequent impact without destructive deformation.

It is a further object of the present invention to obtain this dual character by utilization of a geometrical configuration adapted to minimize bending stress while at the same time retaining the high modulus of elasticity necessary to preserve longitudinal rigidity.

An additional object of the present invention is to accomplish the aforementioned dual character by means of reinforcing a web structure with a suitable arrangement of fibers.

A still further object of this invention is to develop the desired dual character of elasticity and rigidity by incorporating reinforcing rib structure longitudinally along the post structure.

It is yet another object of the present invention to provide a post structure having transverse flexibility to permit lateral contortion and/or deformation to a minimal thickness and thereby reduce moment of inertia and bending stress.

It is also an object of this invention to provide means for protecting attached marker materials from impact and weather degradation.

These and other objects of the present invention are realized in a post configuration (hereinafter referred to as a delineator) wherein the delineator comprises an elongated web and associated reinforcing structure. The web portion of the delineator provides the flexible properties which permit bending of the delineator in response to a bending impact force. The reinforcing structure is necessary to develop a high modulus of elasticity along the longitudinal axis of the delineator. Such reinforcing structure is implemented by specific utilization of fiber orientation within the web structure or by configuring the structure geometrically to provide ribs having the desired high modulus of elasticity which will complement

having sufficient inner surface conformity with said delineator to restrain bending movement of said portion when said driving load is applied.

13. A delineator as defined in claim 12, wherein said casing further comprises an impactable cap for receiving said driving force and for retaining said casing at an upper portion of said delineator.

17. A delineator as defined in claim 1, wherein said web structure is concavo-convex at the forward and rearward faces thereof.

18. A delineator as defined in claim 17, further comprising longitudinal rib structure at side edges of said web structure, said rib structure adding additional longitudinal rigidity to withstand said buckling loads occurring during installation of said delineator.

20. A delineator including:

a web structure of unibody construction having a tapered base to facilitate insertion thereof into a hard surface and being constructed of a material composition substantially uniform along the length of said delineator which develops a modulus of elasticity (E) sufficiently high, when taken in combination with the moment of inertia (I) of said web structure, to develop a maximum buckling load (P_B) in accordance with a delineator length parameter (L) as defined by the relation $P_B = (\pi^2 EI)/L^2$ wherein the resulting buckling load (P_B) is capable of withstanding an impact

force to be applied near the top of a longitudinal axis of said delineator during static installation conditions at said hard surface;

said product of EI being variable in response to deformation of said delineator by a lateral impact force which modifies said geometic structure to decrease the moment of inertia (I) and develop a delineator bending radius (R) as defined by the relationship $R = EI/M$, wherein M is the bending moment of said delineator, said bending radius being sufficiently low to permit passage of a vehicle over said delineator, said material composition having sufficient elasticity to restore to its upright orientation upon dissipation of said impact force;

said geometric structure comprising a nonplanar impacting surface of said web structure which responds with angular contortion upon occurrence of said impact, thereby decreasing the moment of inertia of said delineator during bending motion, reducing said EI product from a longitudinal rigid structure to a flexible structure during deformation.

24. A delineator as defined in claim 20, wherein the web structure comprises a concavo-convex structure for the front and backside of said delineator.

25. A delineator as defined in claim 24, wherein longitudinal ribs extend from sides of said concavo-convex web structure.